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Performance Oriented Packaging Testing of Container, Shipping and Storage, CNU-377/E for Packing Group II Solid Hazardous Materials

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6. AUTHOR(S)

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12a. DISTRIBUTION/AVAILABILITY STATEMENT

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13. ABSTRACT (Maximum 200 words)

This Performance Oriented Packaging (POP) test was conducted to ascertain whether the CNU-377/E Shipping and Storage Container meets the Packing Group II requirements specified by the United Nations Recommendation on the Transportation of Dangerous Goods Document, ST/SG/AC.10/1, Revision 6, Chapters 4 and 9 and the Code of Federal Regulations, Title 49 CFR, Parts 107 through 178, dated 1 October 1991. The container's contents consisted of three inert ruze assemblies weighing a total of 1.8 kg (4 pounds), and an additional .9 kg (2 pounds) of sand. Gross weight of the loaded container was 21.3 kg (47 pounds). The test results indicate that the container has conformed to the POP requirements.

14. SUBJECT TERMS

POP Test of CNU-377/E Shipping and Storage Container

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PERFORMANCE ORIENTED PACKAGING TESTING OF CONTAINER, SHIPPING AND STORAGE, CNU-377/E FOR PACKING GROUP II SOLID HAZARDOUS MATERIALS

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June 1992

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Sponsoring Organization:
Naval Air Systems Command
(Code AIR-41821B)
Department of the Navy
Washington, DC 20361-8050

INTRODUCTION

This Performance Oriented Packaging (POP) test was performed to ascertain whether the CNU-377/E Shipping and Storage Container (Packing Group II) meets the requirements specified by the United Nations Recommendation on the Transportation of Dangerous Goods Document, ST/SG/AC.10/1, Revision 6, Chapters 4 and 9 and the Code of Federal Regulations, Title 49 CFR, Parts 107 through 178, dated 1 October 1991. The container's contents consisted of three inert fuze assemblies weighing a total of 1.8 kg (4 pounds), and an additional .9 kg (2 pounds) of sand. Gross weight of the loaded container was 21.3 kg (47 pounds).

Due to unavailability only one container was used for testing. This is less than the number required by the regulations. Approval for this deviation has been granted by the Under Secretary of Defense, Memorandum for the Joint Logistics Commanders dated 22 February 1990.

TESTS PERFORMED

1. Base Level Vibration Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.608. The container was placed on a repetitive shock platform which has a vertical linear motion of 1-inch double amplitude. Movement of the container was restricted during vibration in all but the vertical direction. The frequency of the platform was increased until the container left the platform 1/16 of an inch at some instant during each cycle. Test time was 1 hour.

2. Stacking Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.606. The container was subjected to a force applied to its top surface equivalent to the total weight of identical packages stacked to a minimum height of 3 meters (including the test container). A weight of 213 kg (470 pounds) was stacked on the test container. The test was performed for 24 hours. The weight was then removed and the container examined.

3. Drop Test

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.603. Five drops were performed from a height of 1.2 meters (4 feet), impacting the following surfaces:

a. Flat bottom.

b. Flat top.

c. Flat on long side.

d. Flat on short side.

e. One corner.

PASS/FAIL

1. Base Level Vibration Test

The criteria for passing the base level vibration test is outlined in Title 49 CFR, Sec. 178.608(c): No test sample should show any deterioration which could adversely affect transportation safety or any distortion liable to reduce packaging strength.

2. Stacking Test

The criteria for passing the stacking test is outlined in Title 49 CFR, Sec. 178.606(d): No test sample may show any deterioration which could adversely affect transportation safety or any distortion likely to reduce its strength, cause instability in stacks of packages, or cause damage to inner packagings likely to reduce safety in transportation.

3. Drop Test

The criteria for passing the drop test is outlined in Title 49 CFR, Sec. 178.603(f): A package is considered to successfully pass the drop tests if for each sample tested, no rupture occurs which would permit spillage of loose explosive substances or articles from the outer packaging.

TEST RESULTS

1. Base Level Vibration Test

Satisfactory.

2. Stacking Test

Satisfactory.

3. Drop Test

Satisfactory.

DISCUSSION

1. Base Level Vibration Test

The input vibration frequency was 3.6 Hz. Immediately after the vibration test was completed, the container was removed from the platform, turned on its side and inspected. No unfavorable distortion or deterioration was observed.

2. Stacking Test

The container was inspected after the 24-hour period was over. No unfavorable distortion or deterioration was observed.

3. Drop Test

After each drop, the container was inspected. The contents were completely retained by the container.

REFERENCE MATERIAL

A. United Nation's "Recommendation on the Transportation of Dangerous Goods," ST/SG/AC.10/1, Revision 6.

B. Code of Federal Regulations, Title 49 CFR, Parts 107-178.

C. Bureau of Explosives Tariff No. BOE 6000K Hazardous Materials Regulations of the Department of Transportation by Air, Rail, Highway, Water including Specifications for Shipping Containers.

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Crane, IN 47522-5000

TEST DATA SHEET

DATA SHEET:	
Container: CNU-377/E Shipping and Storage Container	
Type: 4A2	**Container P/N or NSN:** 8E 8140-01-217-5333
Specification Number: 1W64	**Material:** Steel Box
Gross Weight: 21.3 g (47 pounds)	**Dimensions:** 29" L x 11.187" W x 11.517" H
Closure (Method/Type): Latch	**Tare Weight:** 14.9 kg (33 pounds)
Additional Description:	

PRODUCT:		
Name: See table	**NSN(s):** See table	
United Nations Number: See table		
United Nations Packing Group: II		
Physical State (Solid, Liquid, or Gas): Solid		
Vapor Pressure (Liquids Only): N/A	**At 50 °C:** N/A	**At 55 °C:** N/A
Consistency/Viscosity: N/A	**Density/Specific Gravity:** N/A	
Amount Per Container:	**Flash Point:** N/A	
Net Weight: See table		

TEST PRODUCT:	
Name: Three Fuze Assemblies	**Physical State:** Solid
Consistency: N/A	**Density/Specific Gravity:** N/A
Test Pressure (Liquids Only): N/A	
Amount Per Container: N/A	**Net Weight:** 6.4 kg (14 pounds)
Additional Description: The net weight includes the weight of three fuzes plus an additional .9 kg (2 pounds)	

TABLE 1
Products Approved for Shipping in the CNU-377/E Shipping and Storage Container

NALC/ DODIC	NSN	Product Nomenclature	Packing Drawing Number	Haz Class/Div	UN Number	Units/ Cntr	Total Net Weight (lb)	Total Gross Weight (lb)
1W64	8E 8140-01-217-5333	Fuze, FSU-10/A	1137AS1582	1.4D	0410	3	12	45

CNU-377/E
SHIPPING AND STORAGE CONTAINER
POP MARKING

UN 4A2/Y21/S/**/USA/DOD/NAD

** YEAR LAST PACKED OR MANUFACTURED

Encl (2)